Troubleshooting DigiCora Communication Problems with RS90 Radiosonde Tape

I. Purpose:

This document describes how to identify communication problems between DigiCora and RS90 radiosonde tape. Follow this procedure when DigiCora fails to read RS90 radiosonde tape.

II. Cautions and Hazards:

- Radiosondes are extremely fragile. Take extra caution when handling them.

III. Requirements:

None.

IV. Procedure:

A. Initial Troubleshooting

1. Try running the RS90 tape multiple times using different speeds of tape entry. **Note: Hold the tape with two hands – one to pull and the other to maintain tension at the back of the tape.**
2. Test tape reader.
3. If this does not solve the problem, proceed to B.

B. Inspecting Tapes and Cleaning Tape Reader

1. Inspect all radiosonde tapes to ensure that there is no damage (i.e., tears, improper spacing of feedholes, etc.).
2. Clean paper tape reader by first applying compressed air to blow out any possible debris.
3. Test the reader again.
4. If the problem still persists, proceed to C

C. Cleaning LEDs and Phototransistor Arrays

1. Remove front panel and loosen four screws that secure the tape reader to panel.
2. Remove the tape reader.
3. Remove the black plastic slide by loosening the two nuts that secure it.
4. Clean the LEDs and the phototransistor arrays with soft cloth and alcohol.

5. Re-assemble the tape reader.
6. Test the reader.

V. Important Notes from Chris Keenan (Vaisala)

- The reader optical alignment is critical. There is a small amount that the black plastic guide can be adjusted (up or down). I would first move the guide to the extreme up position. If this does not allow the RS90 tape to be read, the guide can be moved to a central position. If this still does not work, the guide can be moved to the extreme down position. Usually going back and forth a few times with the adjustment is all that is needed to find a position that works.
- The screws that secure the plastic guide also supply power to the LEDs. They must be tightened each time the guide is adjusted to ensure that the LED's are turned on.
- There are test tapes inside the DigiCoraII Service Manual that are used to run different tests on the paper tape reader. These test may not be necessary to run but they are there if the above method is not enough to make the adjustment. The tapes are normally found in a plastic folder within the manual (in section for the PPC15 Console Processor). You will need to run Hyperterminal program (9600 baud, 8,N,1) and connect a cable between PC and P1 of DigiCora. At menu : SYSGEN CONFIG TEST press the command switch for TEST followed by the one for Monitor. There should be an output to the PC stating MPU TEST MONITOR VER.XXXX. Type:

  " X_1_1<CR>" (_ = space character)

  PPC TEST MONITOR should then appear. You can run the various tests with the paper tapes by issuing commands such as "P 1" for test tape #1. Consult the service manual for more information.

VI. References:

None.

VII. Attachments:

None.